Subject:	INFORMATION: Interpretation of FAR 25.801 (d), Ditching Approvals of transport Airplanes	Date:	DEC 10 1982
From:	Leroy A. Keith Manager, Aircraft Certification Division, ANM-100	Reply to Attn. of:	ANM-112: 8040-1 25.801 (d)
To:	Managers ACE-100, ASW-100, ANE-100, AWS-100		

Question has arisen regarding interpretation of certain aspects of the ditching requirements of FAR 25.801 (d). In particular, what constitutes the "reasonably probable water conditions" mentioned therein, and what is the maximum permissible time interval for occupants to enter liferafts.

In addition, confirmation was requested that ditching approvals of all size transport airplanes include an evaluation of the provisions of installing the emergency equipment specified in FAR 25.1411.

The expression "reasonably probable water conditions" is considered judgemental in application to compliance for ditching and has never been specifically defined as to sea state force or wave height. Early ditching investigations of dynamic models were conducted by the National Advisory Committee for Aeronautics (NACA) at Langley Field, Virginia, and NACA Report 1347, issued in 1958 and reflecting a compilation of such test results, set the precedence for early and modern transport airplane designers in substantiating airplanes for ditching by analyses. Such early tests were based on calm-water landings with the supposition that rough-water landings of particular models that were made parallel to waves or swells would exhibit the same general type of performance. Later rough-water ditching investigations of models were conducted and their results were compiled in documents such as Technical Note No. D-101, issued by the National Aeronautics and Space Administration (NASA) in 1959, and also referred to by designers in respective ditching analyses.

In addition to reference to actual ditching incidents, it became an acceptable practice for designers to substantiate the ditching behavior of a proposed airplane design by comparisons in basic geometric configuration to airplane designs approved for ditching and/or the models tested at Langley Field. Parametric comparisons usually revealed some identicalness in geometric aspects and where obvious discrepancies in dimensional relationships were evident, predetermined correction factors were applied.

A maximum permissible evacuation time for liferafts per the rule is also considered judgemental in scope for ditching compliance. During certification, it is usually shown by analysis that an airplane will float for a period of time exceeding the most conservative estimate of time required to completely evacuate the airplane. Evacuation times and rates for liferaft type devices are normally established by analysis and included in the particular airplane model ditching and flotation document presented for approval during type certification. An acceptable evacuation rate for slide/rafts deployed from representative sill heights has been considered to be 60 persons per minute per lane for a duration of 70 seconds.

Prior to approval of any size or type of transport airplane for ditching approval under FAR 25.801, there must be evidence of an engineering evaluation of the provisions for installing the emergency equipment specified in FAR 25.1411.